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REILLY TAR & CHEMICAL CORPORATION

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February 9, 1987

Mr. Kenneth W. Liss
Facilities Compliance Unit
Compliance Monitoring Section
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

RE: 1190400006 -- MADISON COUNTY
GRANITY CITY/REILLY TAR & CHEMICAL CORPORATION
ILDC06278360
SUBPART F

Dear Ken:

This is in answer to your letter of January 6, 1987 and fulfills the commitment to respond made in my January 16, 1987 letter to you and our January 27, 1987 meeting at IEPA. The numbering of these responses corresponds to the "comments and recommendations" portion of your January 6 letter.

1. As you know from data previously submitted, the groundwater gradient across the facility and this area in general -- excepting artificial influences caused by production well withdrawals -- is very slight. Reilly's calendar year 1985 Annual Report listed a groundwater gradient in the surficial alluvial aquifer on the order of 0.002 to 0.005 ft/ft; in the underlying American Bottoms aquifer the gradient ranged from 0.0003 to 0.003 ft/ft. Regional flow direction is expected to be westerly toward the Mississippi River/Chain of Rocks Canal and this is generally confirmed by the monthly groundwater surface elevation data. Groundwater contour maps were prepared from water level elevation information collected during July and October, 1986 and are enclosed. As maps indicate, background wells continue to be hydraulically upgradient, and downgradient detection and assessment wells are positioned properly with respect to monitoring the regulated unit and detecting any potential off-site migration.

2. Logs for test borings B-13 and B-14 were previously completed and were given to you during the January 27 meeting. The five new monitoring wells (13-2, 13-3, 14-1, 14-2 and 14-3) were completed within approximately five feet of their respective test borings; construction details for each were previously submitted (see Reilly's Third Quarter 1986 report).

3. During our recent meeting there was considerable discussion regarding presence of a confining layer beneath the surface impoundment and its possible effect on contaminant migration. With the completion of test borings 13 and 14,

additional geologic data are available to correlate with existing information from wells 1 through 12. Accordingly, new geologic cross sections A-A' (from test boring 14 to test boring 13) and B-B' (from well 5 to well 4) were constructed by ERT and are enclosed. In addition, further geologic investigation in the area of the surface impoundment is planned for in the soon-to-be resubmitted closure sampling plan.

4. Reilly has completed seven consecutive quarters of assessment monitoring beginning in February, 1985. These results are summarized in Tables 5 through 18 of the Fourth Quarter 1986 report. To address the issue of potential off-site migration, historical results from wells located hydraulically downgradient of the waste management area were evaluated in terms of: 1) presence and level of constituents by date, and 2) groundwater flow rate and direction.

Determination of the actual presence of compounds at downgradient monitoring wells is made somewhat difficult by the relative levels of the compounds detected (i.e., extremely low ppb). This is especially true where presence is indicated at less than 20 ppb, a level which generally may not have good reproducibility. Wells which are at, or in close proximity to, the facility boundary and have shown detectable levels of constituents in recent quarters include well 2 (naphthalene at 161 ppb in 7/86 and 119 ppb in 10/86), well 10-2 (cis-DCE at 14 ppb in 7/86 and 11 ppb in 10/86), well 10-3 (1,1-DCA at 6.8 ppb in 10/86) and well 14-1 (1,1-DCA at 13 ppb in 10/86).

Reilly performed confirmatory work at wells 10-2, 10-3 and 14-1 by sampling and analyzing the wells again earlier this month for the previously agreed upon list of constituents. These data will be used in preparation of Reilly's April 15 quarterly report. As I indicated during our January 27 meeting, the April 15 report will go beyond minimum interim status requirements by addressing options for active groundwater management measures in conjunction with closure of the impoundment.

Regarding well 2, extent of migration is estimated as follows:

- groundwater flow rate (per Reilly's 1985 Annual Report) is 0.05 to 0.10 ft/day;
- naphthalene was detected in well 2 in 7/86 and 10/86 after three previous quarters with no contamination (see Table 6 in Reilly's Fourth Quarter 1986 report);
- the approximate maximum migration distance for naphthalene can therefore be calculated as:

  6 mos. x 30 days/mo. x 0.1 ft/day = 18 ft

  where six months is the interval from the last clean sample (4/86) to the latest contaminated sample (10/86).

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The most recent groundwater contour maps indicate that flow direction in the shallow aquifer is towards the west, parallel to the Reilly property boundary. Therefore, the extent of migration may be as great as 18 feet west of well 2, yet still on Reilly property. Again, as part of the April 15 report, groundwater management techniques for this situation will be investigated.

In summary, Reilly believes that there is no clear indication of off-site groundwater contamination. However, rather than to continue only with monitoring in anticipation of a potential off-site release, Reilly believes it is most appropriate to pursue a more active approach to groundwater protection and will, therefore, address options for active groundwater management measures in its April 15 quarterly report.

I trust this reponse fully addresses the issues raised in your January 6 letter. Should you have any further questions, please feel free to contact me at 317-248-6426.

Very truly yours,

REILLY TAR & CHEMICAL CORPORATION

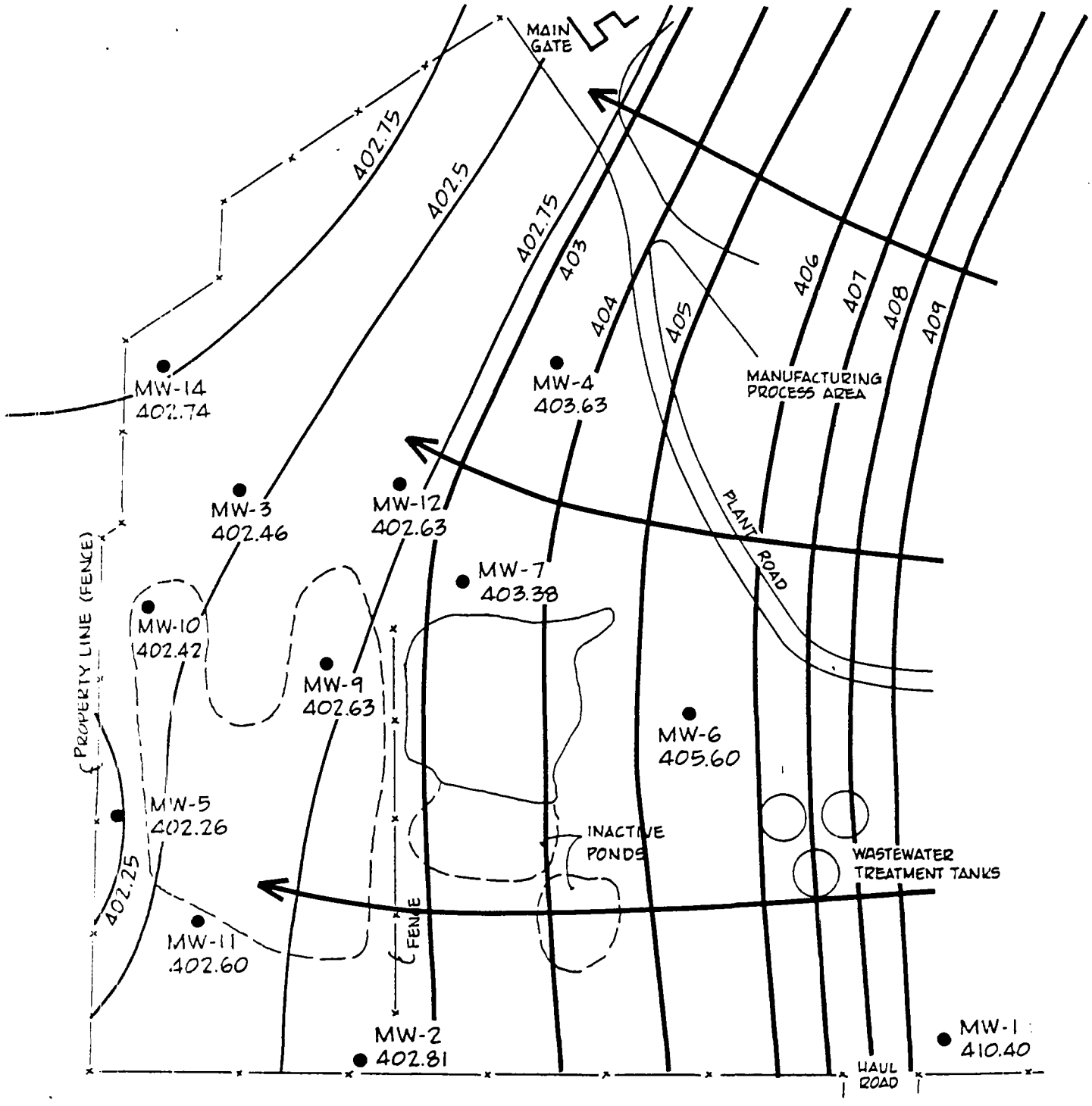
Paul M. Rivers for J. C. Craun

John C. Craun
Senior Engineer,
Corporate Environmental Affairs

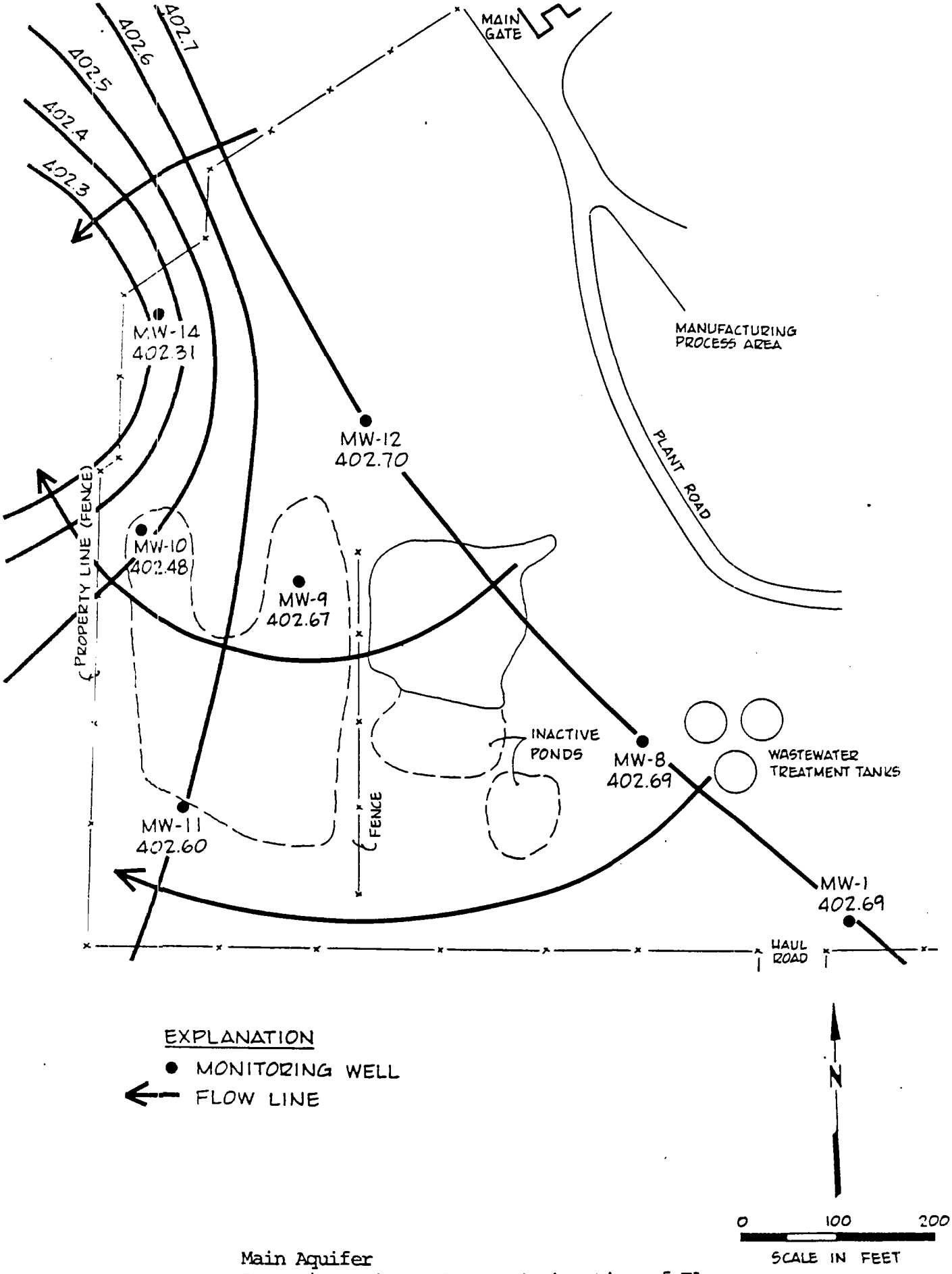
JCC:lt

cc: W. A. Justin
J. V. Lennon
L. L. Pirtle
P. M. Rivers

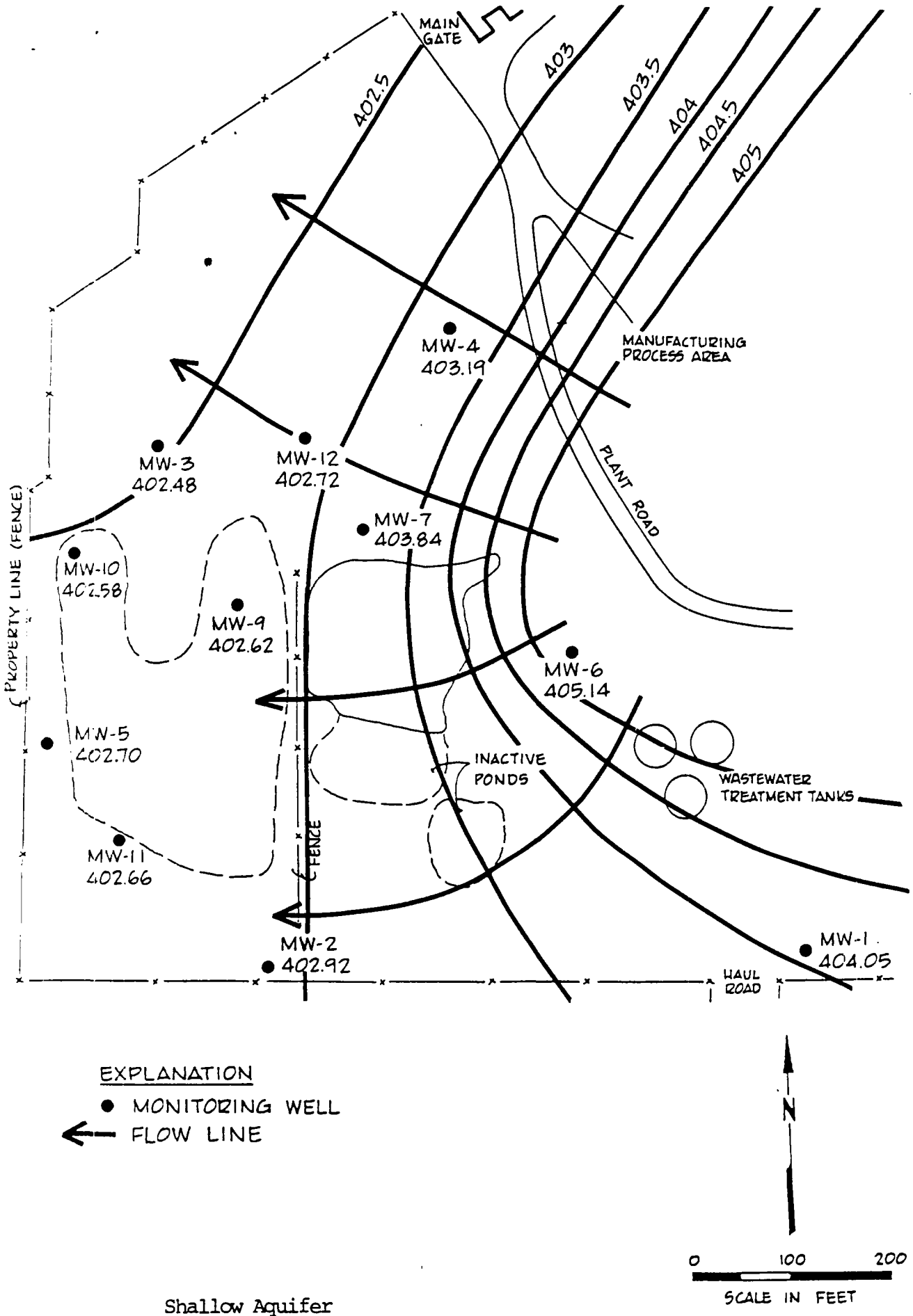
Enclosure



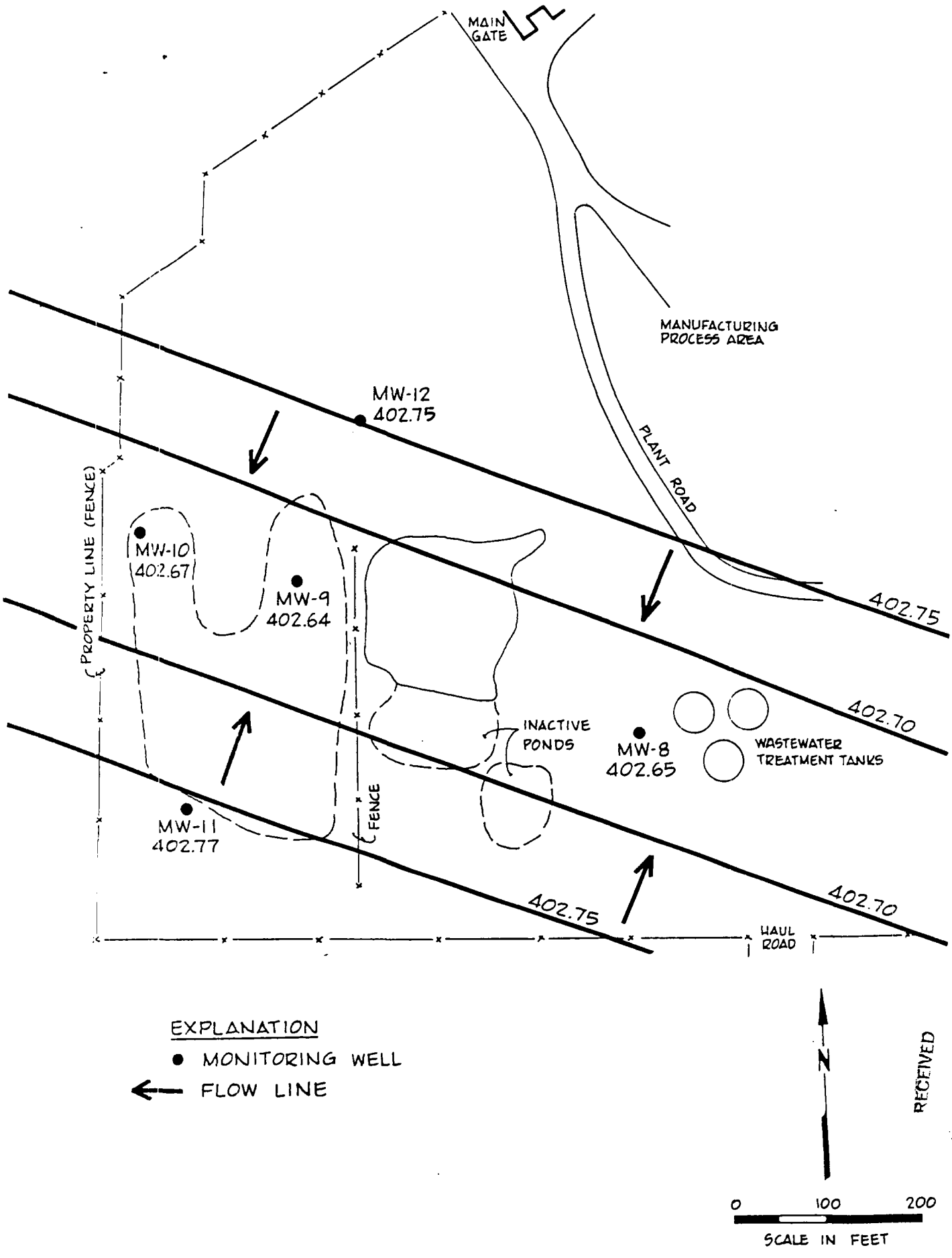
Shallow Aquifer
Potentiometric Surface and Direction of Flow
4th Quarter - October, 1985



Main Aquifer
Potentiometric Surface and Direction of Flow
4th Quarter - October, 1986



Shallow Aquifer
Pontentiometric Surface and Direction of Flow
3rd Quarter - July, 1986



Main Aquifer
Potentiometric Surface and Direction of Flow
3rd Quarter - July, 1986

Project D652-100 Site REILLY TAR & CHEM. **BORING** B-14 Sh 1 of 3

Date Started 9/8/86 Completed 9/9/86 Ground Elevation

Total Depth 103.75 Location GRANITE CITY, IL Logged by G. HOY

Casing I.D. N/A Contractor JOHN MATHES CO., Chet & Chuck

Remarks 1ST 2 split spoons not deconned, all others deconned with Alconox, Reg H_2O & Distilled H_2O. Hole rotary washed & filled w/Drivers Bentonite Grout.

* Visual Contamination

Flow Feet	Depth Feet	Sample Type & Number	Sample Blows per 6 In.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	0						Slight GRASS cover	
							dry tan-brown silty SAND	
	5	S-1	6/6/6	5-6.5	.8'			DRY AUGER
							8'	
	10	S-2	1/15/14	10-11.5	1.1'		dry to moist brown-grey silty SAND	
					12'	▽		
							13'	
	15	S-3	2/1/2 (.4 TSF)	14.5-16	1.9'		moist dark gray soft CLAY, little silt, trace sand	
							17'	
		S-4	8/9/6	18-19.5	.8'		wet tan-gray fine to coarse SAND, little silt	
	20							ROTARY-WASH to BOTTOM of BORING
		S-5	6/9/7	23-24.5	1'		-same- finer @ 24'	
	25							
		S-6	12/14/11	28-29.5	1.1'		wet grey f.-m. SAND, little silt (* trace free-phase black staining- no odor)	
	30							
		S-7	11/11/19	33-34.5	1.1'		-same- f.-c., little silt	
	35							

Project D652-100 Site REILLY TAR & CHEM **BORING** B-14 Sh 2 of 3

Elev. Feet	Depth Feet	Sample Type & Number	Sample Blows per 6 In.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	35							
		S-8	21/21/17	38-39.5	1.4'		- same - fine	
	40							
		S-9	10/20/23	43-44.5	1'		- same - fine to medium	
	45							
		S-10	13/21/27	48-49.5	1.1'		- same - fine to medium	
	50							
		S-11	16/33/31	53-54.5	1.2'		- same - fine to medium (* trace free-phase black staining - no odor)	
	55							
		S-12	19/21/27	58-59.5	1.2'		- same - f-m. SAND w/ black frags 59'-60' (could be carbonaceous) (* trace black free-phase staining @ 60-60.5')	
	60							
		S-13	12/17/18	63-64.5	.9'		- same - fine to medium	
	65						Decided to begin sampling @ 10' intervals because of uniformity of sand & to save time.	
	70							
		S-14	16/10/11	73-74.5	1.0'		- same - medium (No odors or stains)	
	75							
	80							

1912(1-81)

Project D652-100 Site REILLY TAR & CHEM **BORING** B-14 Sh 3 of 3

Elev. Feet	Depth Feet	Sample: Type & Number	Sample: Blows per 6 In.	Sample: Depth Range	Sample: Rec.	Graphic Log	Sample Description	Equipment Installed
	80							
		S-15	14/9/8	83-84.5	.8'		- same - m.-c. SAND, little silt, trace rock frags	
	85							
	90							
		S-16	18/22/22	93-94.5	.9'		GRAVEL & small ROCKS, some sand, little silt	
	95							
	100							
		S-17	28/50/3	103-103.75	.6'			
	105						BEDROCK BOTTOM of BORING @ 103.75'	
							NOTE: @ 37' of drilling for deep well 10 ft. away - strong odor coming from hole (air rotary), no odors detected from samples.	

Project D652-100 Site REILLY TAR & CHEM. **BORING** B-13 Sh 1 of 3

Date Started 9/9/86 Completed 9/10/86 Ground Elevation

Total Depth 108 Location Granite City, IL Logged by G. HOY

Casing I.D. N/A Contractor JOHN MATHES Co. - Chet & Chuck

Remarks Sampler deconned w/Alconox, reg. H_2O, distilled H_2O between samples. Hole rotary washed & filled w/drillers bentonite grout. - Approx. G.W. level - 12' B.G. Surface

Flow Feet / Depth Feet	Sample Type & Number	Sample Blows per 6 In.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
0						dry FILL and brown SILT w/sand	DRY AUGER
					2.5'		
5	S-1	4/2/3 (.5 TSF)	5-6.5	.9		moist soft to firm black silty CLAY, trace sand	
10	S-2	3/2/3 (4 TSF)	10-11.5	1.2	10'		
					12' ▽	moist soft dark gray silty CLAY, some sand, trace brown/tan mottling	
15	S-3	6/5/5	14-15.5	.7	15'		
						wet v. soft gray SAND, some clay & silt, trace rock frag.	ROTARY WASH To BOTTOM of BORING
	S-4	/1/2 (0.TSF)	17.5-19	1.7	18'		
20						wet v. soft lt. gray CLAY, trace silt	
					22'		
	S-5	6/3/5	22.5-24	.9		wet v. soft dk. gray clayey SAND	
25							
					28'		
	S-6	6/5/6	27.5-29	1.4		wet dk. gray f.-m. SAND, trace silt	
30							
35							

Project D652-100 Site Reilly Tar & Chem **BORING** B-13 Sh 2 of 3

Elev. Feet	Depth Feet	Sample Type & Number	Sample Blows per 6 In.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	35							
		S-7	6/9/16	37.5-39	1.1		-same- f.-m. SAND, little silt, trace rock frags.	
	40							
	45							
		S-8	18/20/26	47.5-49	1.2		-same- fine SAND-some silt	
	50							
	55							
		S-9	22/26/30	57.5-59	1.2		-same- fine SAND - some silt	
	60							
	65							
		S-10	7/9/11	67.5-69	1.0		-same- f.-m. SAND, little silt	
	70							
	75							
	80	S-11	17/23/31	77.5-79	1.1		-same- f.-c. SAND, some silt	

Project D652-100 Site Reilly Tar & Chem **BORING** B-13 Sh 3 of 3

Elev. Feet	Depth Feet	Sample Type & Number	Sample Blows per 6 In.	Sample Depth Range	Sample Rec.	Graphic Log	Sample Description	Equipment Installed
	60							
	85							
		S-12	6/6/15	87.5-89	.7	88'	GRAVEL and ROCK frags, some sand, little silt	
	90							
	95							
		S-13	21/25/34	97-98.5	.9			
	100							
	105							
							BEDROCK	
	110						BOTTOM of BORING @ 108'	

1912 (1/81)